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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,788	08/09/2001	Neil Brown	A30588US	6201
28805	7590	12/17/2004	EXAMINER	
RAYMOND R. FERRERA INTELLECTUAL PROPERTY SERVICES 2502 LIVELY LANE SUGAR LAND, TX 77479			KRECK, JOHN J	
			ART UNIT	PAPER NUMBER
			3673	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/925,788	BROWN ET AL. <i>[Signature]</i>
	Examiner	Art Unit
	John Kreck	3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 September 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-6,8-22,25-29,31-35 and 37-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6,8-22,25-29,31-35 and 37-39 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment dated 9/10/04 has been entered.
2. Claims 1-6, 8-22, 25-29, 31-35, 37-39 are pending.

Claim Rejections - 35 USC § 102 and 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 37 and 38 are rejected under 35 U.S.C. 102(b) as being Anticipated by Durup, et al. (U.S. Patent number 5,988,760).

Durup shows an apparatus for solution mining including an injection tube (22) which has an inner diameter of sufficient size to allow for injection of fluid through only a single opening at the terminal end (22a); and a production casing (14) which has an inner diameter sufficient to allow for production of a mixture between the outer surface of the injection tube and the inner surface of the casing as called for in claim 37. It is readily apparent that the Durup apparatus could be used in a single cavity

Durup also shows a production tube (see col. 5, lines 51-57) as called for in claim 38.

2. Claims 1, 3-6,8-10, 13, 19, 21, 25-28, and 35 are rejected under 35 U.S.C. 103(a) as obvious over Huff (U.S. Patent number 4,425,003).

Huff teaches a method for solution mining a subterranean material including injecting a fluid (col. 2, line 40) into an elbow well (see col. 1, line 63 through col. 2, line 4) through only a single opening at a terminal end of the tube (see, e.g. claim 2), the fluid forming a mixture with the subterranean material in a cavity; and collecting the mixture from the elbow well (col. 2, line 52). Huff does not explicitly teach an elbow well having a single cavity. It is well established in patent law that the omission of an element (in this case the second cavity) and its function is obvious if the function of the element is not desired. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Huff process to have included an elbow well with only a single cavity as called for in claim 1; for example, to solution mine a small deposit.

See, for example, *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965) (Omission of additional framework and axle which served to increase the cargo carrying capacity of prior art mobile fluid carrying unit would have been obvious if this feature was not desired.)

Huff also teaches the making the elbow well as called for in claim 3.

Huff also teaches the drilling the elbow well into a bed as called for in claim 4.

Huff also teaches the casing the elbow well as called for in claim 5.

Huff also teaches the injecting into an injection tube (16) as called for in claim 6.

Huff also teaches the making the cavity comprises the mixture as called for in claim 8.

Huff also teaches the mixture comprises a solution as called for in claim 9.

Huff also teaches the water as called for in claim 10.

Huff also teaches the collecting the mixture through a production tube (17) as called for in claim 13.

Regarding claim 19: Huff fails to disclose any operating pressure; and thus fails to explicitly teach the ambient pressure. Since Huff fails to disclose any specific pressure and fails to teach any pressurizing, then it is assumed that Huff anticipates "ambient" pressure as called for in claim 19; alternatively, if it is deemed that Huff does not anticipate the ambient pressure, then it would have been obvious to one of ordinary skill in the art at the time of the invention to have operated the Huff method at ambient pressure as called for in claim 19, in order to eliminate any need for high pressure equipment.

Regarding independent claim 21:

Huff shows a system for solution mining including injection means for injection fluid into an elbow well through only a single opening at the terminal end (see, e.g. claim 2), the fluid forming a mixture with subterranean material in a cavity and a collection means for collecting the mixture. Huff does not explicitly teach an elbow well

Art Unit: 3673

having a single cavity. It is well established in patent law that the omission of an element (in this case the second cavity) and its function is obvious if the function of the element is not desired. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Huff system to have included an elbow well with only a single cavity as called for in claim 21; for example, to solve mine a small deposit.

Huff also teaches the means for casing (15) as called for in claim 25.

Huff also teaches the injection tube as called for in claim 26.

Huff also teaches the subterranean solution as called for in claim 27.

Huff also teaches the water as called for in claim 28.

Regarding claim 35: Huff fails to disclose any operating pressure; and thus fails to explicitly teach the ambient pressure. Since Huff fails to disclose any specific pressure and fails to teach any pressurizing, then it is assumed that Huff anticipates "ambient" pressure as called for in claim 35; alternatively, if it is deemed that Huff does not anticipated the ambient pressure, then it would have been obvious to one of ordinary skill in the art at the time of the invention to have operated the Huff method at ambient pressure as called for in claim 35, in order to eliminate any need for high pressure equipment.

3. Claims 1, 3-6,8-10, 13, 21, 25-28 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103 as obvious over Durup, et al. (U.S. Patent number 5,988,760).

Durup teaches a method for solution mining a subterranean material including injecting a fluid into an elbow well through only a single opening disposed at the terminal end (22a) the fluid forming a mixture with the subterranean material in a single cavity; and collecting the mixture from the elbow well as called for in claim 1. Durup shows, at 20a, a single cavity (see figure 6). It is the examiner's position that the single cavity, which is formed in the process of Durup (prior to forming the other cavities 20b, 20c, etc) anticipates the elbow well within a single cavity as called for in claim 1. If it is deemed that the Durup reference does not anticipate a single cavity within the scope of the claimed invention, then it would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Durup process with only a single cavity, for example, to solution mine a small deposit. It is well established in patent law that the omission of an element (in this case the second cavity) and its function is obvious if the function of the element is not desired.

Durup also teaches the making the elbow well as called for in claim 3.

Durup also teaches the drilling the elbow well into a bed as called for in claim 4.

Durup also teaches the casing (14) the elbow well as called for in claim 5.

Durup also teaches the injecting into a tube (22) as called for in claim 6.

Durup also teaches the making the cavity comprises the mixture as called for in claim 8.

Durup also teaches the mixture comprises a solution as called for in claim 9.

Durup also teaches the water as called for in claim 10.

Durup also teaches the collecting the mixture through a production tube (see col. 5, lines 51-57) as called for in claim 13.

Regarding independent claim 21:

Durup shows a system for solution mining including means for injection fluid into an elbow well through only a single opening disposed at the terminal end (22a), the fluid forming a mixture with subterranean material in a single cavity and means for collecting the mixture as called for in claim 21. It is the examiner's position that the single cavity, which is formed in the process of Durup (prior to forming the other cavities 20b, 20c, etc) anticipates the elbow well within a single cavity as called for in claim 1. If it is deemed that the Durup reference does not anticipate a single cavity within the scope of the claimed invention, then it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Durup system to have only a single cavity, for example, to solution mine a small deposit. It is well established in patent law that the omission of an element (in this case the second cavity) and its function is obvious if the function of the element is not desired.

Durup also teaches the means for casing (14) as called for in claim 25.

Durup also teaches the injection tube as called for in claim 26.

Durup also teaches the subterranean solution as called for in claim 27.

Durup also teaches the water as called for in claim 28.

4. Claims 2, 11, 20, 22, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huff in view of Kube (U.S. Patent number 3,953,073).

Huff fails to teach the trona as called for in claims 2 and 22; the caustic as called for in claims 11 and 29; or the step of processing as called for in claims 20. Huff teaches that the method can be used with "any other soluble mineral" (col. 1, line 51).

Kube teaches that trona is a soluble mineral, and is desirably mined to recover valuable products, such as sodium carbonate; and that a caustic solution is advantageous for solution mining trona (col. 2, lines 41-58) because it improves the solubility of the carbonate/bicarbonate system. Kube further teaches that processing is desirable subsequent to mining (col. 3, line 20) to extract sodium carbonate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Huff method to solution mine trona; thus having the subterranean material comprising trona as called for in claims 2 and 22; in order to obtain the valuable product of sodium carbonate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Huff method to solution mine trona, and to have further modified the Huff method/apparatus to also include the fluid comprising a caustic mixture as called for in claims 11 and 29, and as taught by Kube, in order to improve the solubility.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Huff method to solution mine trona, and to have further modified the Huff method to also include the step of processing as called for in claim 20,

and as taught by Kube, in order to extract the valuable sodium carbonate from the solution.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huff in view of Brinton (U.S. Patent number 2,822,158).

Huff fails to teach the heating of fluid.

Brinton teaches that it is sometimes desirable to heat fluid for solution mining, based on the material to be mined (col. 14, lines 72-73).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Huff method to have included the step of heating the fluid as called for in claim 12; based on the material to be mined

6. Claims 14-18 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huff in view of Larson, et al. (U.S. Patent number 4,222,611).

Huff fails to explicitly teach the pumping/means for pumping as called for in claims 14 and 31; the pump lifting through the tube as called for in claim 15; the pump in the elbow well as called for in claim 18; and the means for placing the pump as called for in claim 32.

It is notoriously conventional in the art of solution mining to use pumps to pump fluid to the surface; this is shown by Larson (col. 2, lines 2-6). Larson shows a pump within a well, and thus inherently teaches the means for placing a pump in a well;

pumps are often placed within wells because pumps operate more efficiently with short suction lengths.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Huff method to have included pumping the mixture as called for in claim 14 or to have the means for pumping as called for in claim 31, in order to help deliver the mixture to the surface.

With regards to claim 15, Larson teaches that the pump lifts the fluid through the production tube; thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have modified the Huff method to have a pump lift fluid through the production tube as called for in claim 15, in order to help deliver the mixture to the surface.

With regards to claims 16 and 17; Huff teaches the delivering to a collection location at the surface.

With regards to claim 18, Larson teaches that the pump is located in the well, thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have modified the Huff method to have placed a pump in the elbow well as called for in claim 18, in order to help deliver the mixture to the surface.

With regards to claim 32, Larson teaches that the pump is located in the well, thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have modified the Huff method to have included means for placing a pump in the elbow well as called for in claim 32, in order to help deliver the mixture to the surface.

With regards to claims 33 and 34; Huff teaches the delivering to a collection location at the surface.

7. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durup in view of Larson.

Durup fails to explicitly teach the pump as called for in claim 39.

It is notoriously conventional in the art of solution mining to use pumps to pump fluid to the surface; this is shown by Larson (col. 2, lines 2-6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Durup system to have included a pump connected to the production tube, in order to help deliver the mixture to the surface.

Response to Arguments

8. Applicant's arguments filed 9/10/04 have been fully considered but they are not persuasive.

Applicant has argued that none of the prior art teaches or suggests "injecting a fluid...through only a single opening". The single opening is shown clearly in Durup at 22a, and also shown, but unmarked in Huff.

Applicant has asserted that Huff teaches "a method for establishing *two or more* cavities *contemporaneously...*"; and thus allegedly teaches away from a single cavity. This is not found persuasive in light of claim 2 of Huff: "only one chimney/solution mining cavity is operated at a time..." which clearly contemplates a single cavity.

Applicant has argued that one of ordinary skill in the art would understand the single cavity to be superior to "multi-cavity, fracture type wells such as those disclosed in Huff and Durup" as described on page 6, line 22 of applicant' specification: "*Fracturing is unnecessary in many embodiments of the invention, because the injection tube 45, production casing 60b, and production tube 60a are in the same well 15.*" First, it is noted that neither Huff nor Durup disclose fracturing; second, Huff and Durup both clearly teach the tubes and casing in the same well; and finally, nowhere in applicant's specification can there be found any purported advantages to having only a **single cavity**.

Applicant's further arguments concerning whether the Huff and Durup references "teach away" from the claimed invention are not persuasive; since the arguments are based on the unsupported premise that Huff and Durup teach fracturing.

With regards to applicant's arguments concerning the injecting through only a single opening at the terminal end of the tube; it is again noted that applicant's claim language "comprising" is open ended. It is readily apparent that in the Durup process, fluid is injected into the elbow well only through the opening 22a. It may travel through openings in the casing to enter the formation and cavity, but applicant's use of the term "comprising" does not exclude additional steps. See MPEP 2111.03. Likewise, in the Huff process, the fluid is clearly injected into the well only through the opening at the end of the tube.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

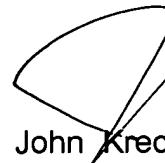
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is (703)308-2725. The examiner can normally be reached on M-F 5:30 am - 2:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Shackelford can be reached on (703)308-2978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3673

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JOHN KRECK
PRIMARY EXAMINER

John Kreck
Examiner
Art Unit 3673

JJK